



QUALITY INDICATORS™ SOFTWARE Results of Comparison Testing Between SAS v2022 and WinQI v2022 Software

Prepared for:

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The Agency for Healthcare Research and Quality (AHRQ) Quality Indicators™ (QI) were developed specifically to meet the short-term needs for information on healthcare quality using standardized, user-friendly methods and existing sources of data. The AHRQ QI program is unique in that it provides free, publicly available software tools that calculate the AHRQ QI rates. The software allows users to calculate QI rates based on their own administrative data using a standard desktop computer.

Each version of the QIs is released with software in two different platforms: a SAS®† application and a Windows application. The SAS software was first released in the late 1990s. It consists of several modules of SAS code and requires a SAS license to run. The Windows-based software, known as WinQI, was first released in 2005. It was created in order to provide an easy-to-use, low-cost option for calculating the QIs that was not dependent on licensed software. Developed on Microsoft® Visual Studio using C# and .NET, AHRQ WinQI runs on Windows operating systems and requires only freely available software components: AHRQ-produced software, Microsoft .NET (for runtime environment and core software libraries), and Microsoft SQL Server Express (for data storage and manipulation).

Table 1 lists the differences between SAS QI v2022 and WinQI v2022. WinQI software, v2022 is available as a 64-bit application only and runs on Windows 8 and above operating systems.

Table 1. Differences between SAS QI v2022 and WinQI v2022

SAS QI v2022	WinQI v2022
Requires licensed SAS software	Requires free downloadable software
User can modify the software	User is unable to modify the software
Data load and error checking at the discretion of the user	Includes data load and error checking functions
User must run a set of programs for each module, and all indicators in a module are displayed in output	All four QI modules calculated in a single program, and user can select which indicators to output
Observations with FIPS codes not present in the population file are excluded from Area level metrics.	Observations with FIPS codes not present in the population file are included in Area level measures.

Both versions of the QI software are updated on an annual basis to reflect changes in the AHRQ QI technical specifications. New software versions and updated technical specifications are released simultaneously. Routine annual updates include yearly International Classification of Diseases, 10th revision, Clinical Modification (ICD-10-CM/PCS), Medicare Severity-Diagnostic Related Groups (MS-DRG), Major Diagnostic Categories (MDC), new Census population files, and newly derived risk adjustment parameters.

The AHRQ QI software goes through rigorous testing prior to release, including the following:

- Comparison of rates produced through AHRQ QI SAS and AHRQ WinQI, aggregated and detailed hospital/county-level.
- User testing.

This document summarizes the testing results for AHRQ QI software, WinQI v2022 (released in July 2022) and SAS QI v2022 (released in July 2022). Testing was performed using AHRQ's Healthcare Cost and Utilization Project (HCUP) data: ~8 Million total discharges in Wisconsin, Michigan, Rhode Island, New Jersey, Florida, North Carolina, Washington, and Arizona using the 2019 and 2020 HCUP State Inpatient Databases (SID). To ensure comparability of Area rates, the population year of all observations was set to 2019 and observations with a FIPS code not in the 2019 population data were removed.

The rates were calculated using SAS QI v2022 and AHRQ WinQI v2022.

Test Results

- We observed no variances in the observed and risk adjusted rates between v2022 SAS QI and WinQI for all indicators contained in PQI, IQI, PSI, and PDI modules.

The comparison of Observed rates between SAS QI v2021 and SAS QI v2022 can be accessed at:

https://qualityindicators.ahrq.gov/Downloads/Software/V2022/AHRQ_QI_Rate_Comparison_v20121_v2022.pdf

[†] SAS® is a statistical software package distributed by the SAS Institute, Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA. The company may be contacted directly regarding the licensing of their products. The SAS Institute, Inc. has no affiliation with AHRQ nor involvement in the development of the AHRQ QI. For more information, visit the SAS Institute website at <http://www.sas.com>.

[‡] HCUP Databases. Healthcare Cost and Utilization Project (HCUP). 2019 and 2020.